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Cambium Networks

ePMP | elevate

Quick Start Guide

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Introduction and Concept

ePMP™ Elevate allows the network operator, by remotely or locally software upgrading each ePMP Elevate-compatible subscriber device and installing an ePMP 1000 or *e*PMP 2000 access point, to receive substantial network performance and scalability benefits without requiring new subscriber hardware or physical installations. This Quick Start Guide provides guidance through the preparation and migration process using ePMP Elevate.

Migration Step 1: Review the ePMP Elevate Prerequisite Checklist

Please reference the information in this section to ensure a smooth ePMP Elevate migration experience.

Caution! *The ePMP Elevate migration process does require a brief system outage during access point transition. Please plan migration windows appropriately to minimize customer impact. Careful preparation and device pre-configuration will reduce resultant system downtime.*

3RD-PARTY SUBSCRIBER MODULE REQUIREMENTS/ACTIONS

- ☐ **Verify that your subscriber device is ePMP Elevate-compatible.**
  Visit the ePMP Elevate website for an up-to-date listing of ePMP Elevate-compatible 802.11n devices. All subscriber devices must be capable of 3rd-party software (ePMP Elevate) installation. *e*PMP Elevate devices may operate only as subscriber modules. ePMP Elevate does not support device operation in point-to-point, access point, or standard Wi-Fi modes.
- ☐ **Verify that your subscriber native software version is supported**
  XM/XW software version 5.6.6 is recommended. Other software versions not officially tested.
- ☐ **Verify/configure your current network's Network Mode.**
  If your current network is operating in **Router** mode, the network must be configured to operate in **Bridge** mode prior to ePMP Elevate transition.
- ☐ **Verify/configure your current network's Channel Size**.
  All subscribers must be configured with a channel width of **10 MHz**, **20 MHz**, or **40 MHz** prior to ePMP Elevate transition.
- ☐ **Record all subscriber RSSI (Received Signal Strength Indicator) and SNR (Signal-to-Noise Ratio) metrics prior to transition.**

FREQUENCY SUPPORT AND REGULATORY CERTIFICATIONS

Upgraded ePMP Elevate subscriber modules support operation in the frequency range 5150 – 5980 MHz. Upon upgrading to ePMP Elevate subscribers will be configured to scan all available frequencies to facilitate network entry.

Caution!

The user must ensure that deployed ePMP products operate in accordance to local regulatory limits. ePMP and ePMP Elevate-compatible devices may not share regulatory certifications in all regions.

Some 3rd-party radio devices were originally FCC-certified and labeled to operate in the 5.8 GHz frequency range only. An ePMP Elevate upgrade enables 3rd-party radios to operate within the U-NII-1 through U-NII-4 frequency band range 5150 – 5980 MHz. To ensure FCC regulatory compliance for ePMP Elevate-upgraded radio devices:

1. A new label must be applied to the device with the updated FCC ID clearly visible. 3rd-party radio manufacturers support FCC label requests online (labels are shipped directly).
2. FCC-allowed transmit power in the 5.8 GHz band has been reduced with the latest regulatory guidelines. ePMP Elevate adheres to these FCC power limits, and an upgrade to ePMP Elevate software may introduce a reduction of the device's operating transmit power to adhere to regulatory limits (as a result of the ePMP access point's transmit power control mechanism).

Although the access point does dynamically control subscriber output power, the subscriber's configured transmit power parameter is not altered upon upgrade.

This potential reduction of transmit power may have an impact on your network's radio link budgets. Cambium Networks' LINKPlanner tool allows operators to model link scenarios based on transmit power, geography, distance, antenna height, and other factors.

Migration Step 2: Pre-configure the ePMP access point for deployment

To ensure a quick subscriber transition of ePMP Elevate devices to the ePMP access point, follow the procedure below to pre-configure the ePMP access point.

ACCESS POINT PRE-CONFIGURATION EQUIPMENT AND TOOLS

- ☐ ePMP 1000 or ePMP 2000 connectorized access point connected to PoE power supply port "Gigabit Data+Power" by Ethernet cable
- ☐ PC connected to PoE power supply port "Gigabit Data" by Ethernet cable
- ☐ Power Supply powered on
- ☐ Supported browser – Chrome v29, Firefox v24, Internet Explorer 10, Safari v5 or later

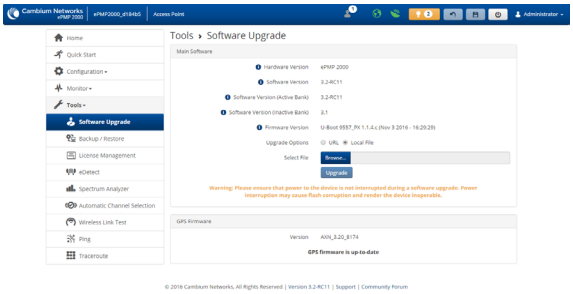
ACCESS POINT PRE-CONFIGURATION PROCEDURES

To ensure a quick subscriber transition of ePMP Elevate devices to the ePMP access point, follow the procedure below to pre-configure the ePMP access point.

Access Point software upgrade

To support registration from ePMP Elevate subscribers, the ePMP must be running ePMP Software Release 3.2 or later.

1. Download ePMP Software Release 3.2 (or later) from the Cambium Support website. For example, the Software Release 3.2 software package is named **ePMP-GPS_Synced-v3.2.tar.gz**.
2. Using a web browser, navigate to the access point's default IP address **192.168.0.1.**
3. Login to the access point web management interface with username: `admin` and password: `admin`.
4. Navigate to **Tools** > **Software Upgrade** and click the **Browse…** button to select the software release file downloaded in step 1.
5. Click **Upgrade**, then click the **Reboot Device** button.

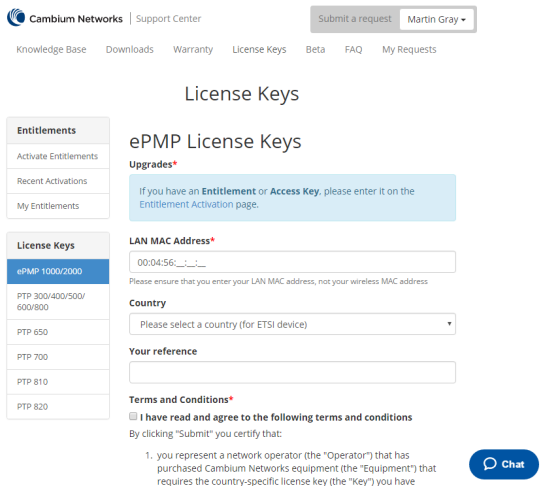


Access Point license generation and installation

To support registration from ePMP Elevate subscribers, the ePMP 1000/2000 access point must be configured with the appropriate licensing. ePMP Elevate entitlement IDs are emailed to operators by Cambium Networks distributors. The entitlement ID is used to generate a license key which is copied from the Cambium Networks License Key website and pasted to the ePMP access point to unlock ePMP Elevate functionality.

Generate license via the Cambium Networks License Keys website

1. Navigate to the Cambium Networks Entitlement Activation website.
2. Enter your entitlement IDs and click

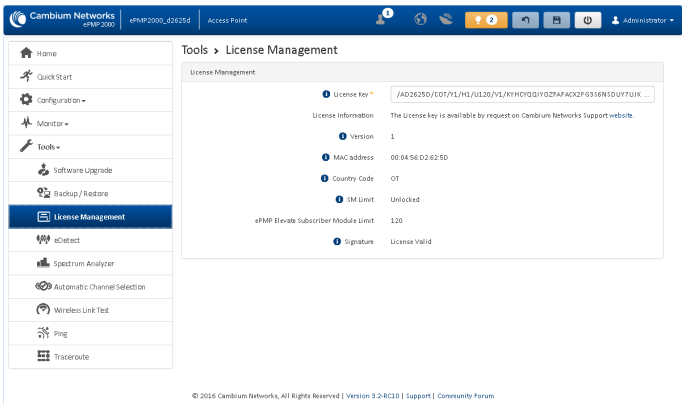


Check. Applicable entitlements are displayed below.

3 Click **Activate** to enact your entitlement.
4 Navigate to the Cambium Networks **ePMP License Keys website**.
5 Enter the **LAN MAC Address** of the ePMP access point.
6 Read the terms and conditions then acknowledge agreement by ticking the corresponding checkbox.
7 Click **Request Key**. An alphanumeric key is displayed below.
8 Copy the license key to the clipboard (Ctrl-C).

Enter the ePMP Elevate license key on the ePMP access point

1 Using a web browser, navigate to the access point's default IP address **192.168.0.1.**
2 Login to the access point web management interface with username: `admin` and password: `admin`.
3 In the access point web management interface, navigate to **Tools** > **License Management**.
4 Paste the provided license key in field **License Key**.



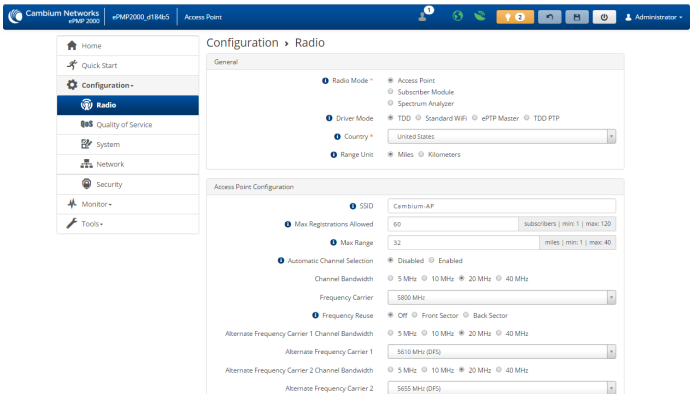
Configure additional ePMP access point parameters per your network deployment

1 Using the ePMP access point web management interface, configure all applicable radio, QoS (Quality of Service), system, networking, and security parameters.

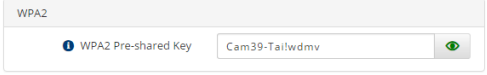
Note
After upgrade, ePMP Elevate subscribers retain only their configured **IP Address** and **Device Name**. All other parameters, including configured access point SSIDs, frequency configuration, VLAN, etc. must be configured after upgrade to ePMP Elevate.

2 Verify access point basic security parameters:
- **Wireless Security** is set to **Open** or **WPA2**, and
- **WPA2 Security Key** (if applicable) is configured to the system default of `Cam39-Tai!wdmv`

After upgrade, ePMP Elevate subscribers are configured with **Wireless Security** options **RADIUS** and **WPA2** enabled, meaning that both security options will be attempted upon network entry.



After upgrade ePMP Elevate subscribers are configured with the default ePMP **WPA2 Pre-shared Key** of `Cam39-Tai!wdmv`. If the ePMP access point has been configured with a new, non-default **WPA2 Pre-shared Key**, this key



must be configured on all network subscribers to allow network entry.

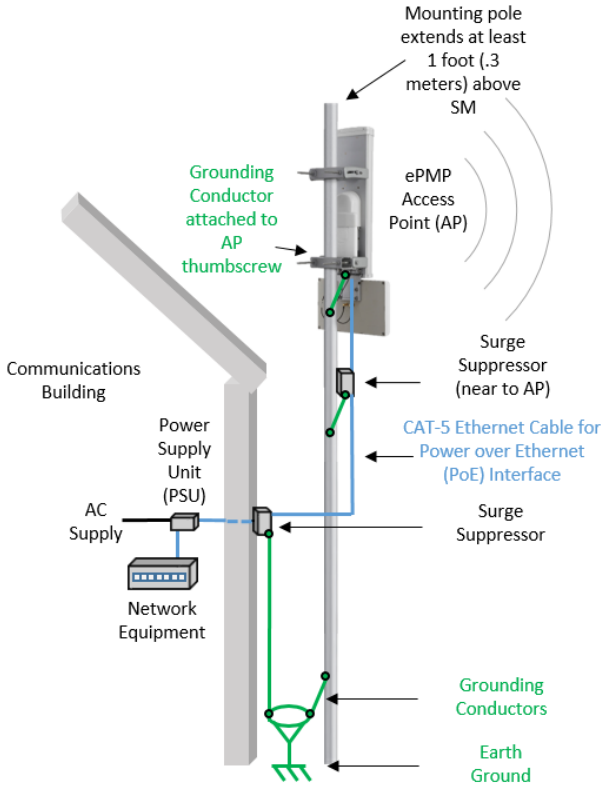
3 After configuring access point parameters, click **Save** then click the **Reboot** button.

Migration Step 3: Install and power on the ePMP access point on-site

For additional ePMP access point installation requirements, see the *ePMP User Guide*, available here: Cambium Support website.

Option 1 (Preferred): When possible, install the ePMP access point onsite after pre-configuration. This technique offers the best opportunity to minimize the network outage time required upon subscriber transition to the ePMP access point.

Option 2: Alternatively, the ePMP access point may be installed as a direct replacement to the currently operating access point using the same mounting equipment (when possible). This technique will require more subscriber downtime than option 1.



Migration Step 4: Upgrade ePMP Elevate-compatible subscribers

Installing the ePMP Elevate software on supported subscriber modules allows registration of the subscriber to the ePMP access point. This procedure may be completed remotely (over-the-air, does not require a site visit) or locally (via direct wired Ethernet connection to each subscriber module, requires a site visit).

Caution! *The ePMP Elevate migration process does require a brief system outage during access point transition. Once the ePMP Elevate software has been installed on a subscriber, it will no longer register to its original access point, and network entry will only be available via the ePMP access point. Please plan migration windows appropriately to minimize customer impact. Careful preparation and device pre-configuration will reduce resultant system downtime.*

SUBSCRIBER SOFTWARE UPGRADE TO EPMP ELEVATE

1 Download ePMP Elevate software (based on device type) from the Cambium Support website.
2 Using a web browser, navigate to the subscriber module's configured management IP address.
3 Login to the subscriber module using your configured username and password.
4 Upgrade the device software using the ePMP Elevate software package from Step 1.

5 Reboot the device.
The subscriber will now begin to scan all available frequencies and channel bandwidths for network entry via the installed ePMP access point.

Note
After upgrade, ePMP Elevate subscribers retain only their configured IP Address and Device Name. All other parameters, including configured access point SSIDs, frequency configuration, VLAN, etc. may be configured over-the-air after upgrade to ePMP Elevate.

SUBSCRIBER MODULE POST-UPGRADE NOTES

- After upgrade, the ePMP Elevate subscriber module may be accessed via its previously-configured management IP address.
- ePMP Elevate subscriber modules may be access via default username: `admin` and password `admin`.
- To reduce scan time at startup, it is recommended to configure only your primary and alternate frequencies / channel sizes. These may be configured on the ePMP Elevate subscriber's **Configuration** > **Radio** page
- After upgrade, the ePMP Elevate subscribers are configured by default to attempt network entry to the first ePMP access point scanned. To specify a specific access point SSID, configure the **Preferred APs** table (located on the ePMP Elevate subscriber's **Configuration** > **Radio** page) to match the SSID configuration on the deployed ePMP access point.

Migration Step 5: Power down original access point, power on ePMP access point

Caution! *This step will introduce a brief system outage as the ePMP Elevate subscribers are migrated to the ePMP access point*

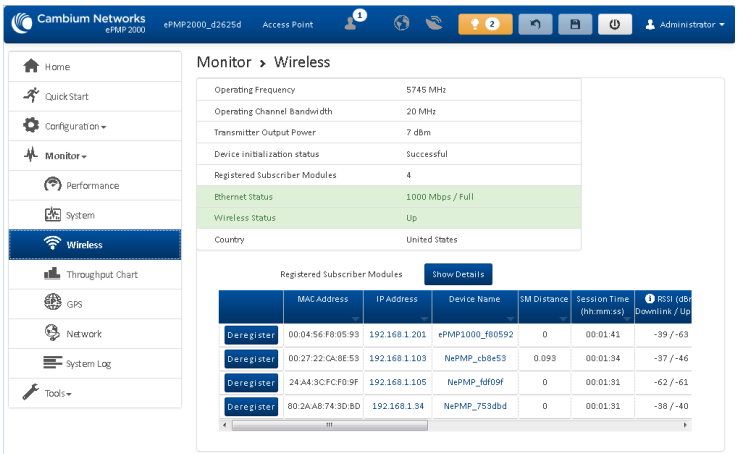
ACCESS POINT TRANSITION

1 Power down the existing access point. When possible, it is recommended to physically remove original access point equipment after verifying subscriber registration and link quality (Migration Step 6).
2 Power on the ePMP access point. After this step, the ePMP Elevate-upgraded subscribers will register to the ePMP access point.

Migration Step 6: Verify subscriber registration and link quality

EPMP ELEVATE SUBSCRIBER REGISTRATION VERIFICATION

1 Log into the ePMP access point web management interface.
2 On the access point **Home** page, verify that the **Registered Subscriber Modules** statistic displays the expected subscriber count.
3 Navigate to the access point **Monitor** > **Wireless** page and validate subscriber **RSSI** and **SNR** values. Updated FCC transmit power regulations may affect link budget, see Frequency Support and Regulatory Certifications.
4 To test wireless link data capacity, navigate to the access point page **Tools** > **Wireless Link Test**.



Migration Step 7: Remove original access point equipment

Once the ePMP link has been validated, the original access point equipment may be removed.

ePMP Elevate Warranty and Support

Cambium Networks supports software maintenance of ePMP Elevate, and ePMP Elevate subscribers are operated at the user's own risk. For ePMP Elevate software support after migration, visit the Cambium Networks Support Website.

Cambium Networks does not accept any liability for reliability or interface responsiveness of ePMP Elevate-compatible hardware upgraded with ePMP Elevate.

Cambium Networks does not accept any liability for hardware damage or replacement.

ePMP Elevate Capabilities and Specifications

The following table provides detail of ePMP Elevate operation after installation/upgrade:

Registration and Licensing	**Total Registration Capacity**	120 subscribers
	ePMP Elevate Subscriber Licensing	ePMP 1000/2000 access points support a maximum number of ePMP Elevate subscriber modules based on the purchased ePMP Elevate licensing.
	ePMP Subscriber Licensing	Cambium ePMP subscriber modules are not limited by licensing, and may be deployed up to the platform limit (120 subscribers, inclusive of upgraded ePMP Elevate subscriber modules).
	Additional ePMP Elevate Licensing	Additional licenses may be purchased and installed on the ePMP 1000/2000 access point to increase the capacity of supported ePMP Elevate subscribers.
Modes of Operation	**Scheduler Modes**	TDD (Time Division Duplex) and Flexible
	ePMP Elevate Subscriber Mode Support	ePMP Elevate devices may operate only as subscriber modules. ePMP Elevate does not support device operation in point-to-point, access point, or standard Wi-Fi modes.
Radio Operation	**Frequencies Supported**	5150 – 5980 MHz Note The available spectrum for operation depends on the region. When configured with the appropriate country code, the unit will only allow operation on those channels which are permitted by the regulations.
	Channel Sizes Supported	5, 10, 20, 40 MHz
Device Management	**cnMaestro**	Inventory management, device onboarding, daily operations, and maintenance of ePMP Elevate subscriber modules and ePMP products is supported by cnMaestro cloud-based management software. ePMP Elevate subscriber modules may also be managed by other third-party Network Management/Element Management systems via the ePMP software SNMP protocol support.